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NEST BOXES FOR WOOD DUCKS

By Clark G. Webster, Wildlife Biologist

Unlike wild ducks that nest on the ground, the "woodie" or "summer duck" usually lays its eggs in tree cavities. This peculiarity helps explain why wood-duck numbers dropped so low during the past century, following heavy cutting of mature timber and destruction of their natural nesting sites. It explains also why provision of artificial nesting sites is practicable in many places.

In several States breeding populations of wood ducks have been increased by supplying nest boxes. The Illinois Natural History Survey deserves credit for much pioneering work in testing this method. Massachusetts also has been active in this field and has erected thousands of boxes with a consequent increase in wood-duck numbers. Other States, private groups, and individuals have accomplished much in providing nest boxes. Although possibilities of increasing wood ducks by this means vary according to local conditions throughout the bird's breeding range (largely the eastern half of the United States and the Pacific Coast States to central California), there are many areas, both large and small, where they can benefit from suitably erected nest boxes.

Use of Nest Boxes by Other Wildlife

Wood-duck nest boxes have proved attractive to various kinds of wildlife, some welcome and others not. Desirable species include goldeneyes, hooded mergansers, screech owls, sparrow hawks, bluebirds, tree swallows, and crested flycatchers. Resulting nest-site competition with wood ducks is generally slight and can be reduced by erecting more boxes. In some areas, starlings may take over boxes by building large bulky nests in them, occasionally right over a clutch of duck eggs. Opossums, white-footed mice, flying squirrels, and gray squirrels sometimes occupy the boxes. Locally, gray squirrels may compete by filling available boxes with their leaf nests.

Cover: Drilling pilot holes for lag screws used to mount box.

Construction of Nest Boxes

To serve their purpose well, boxes not only must be suitable for use by wood ducks but also should exclude their enemies. Among predators, against which precautions must be taken, the raccoon is by far the worst. It consumes many eggs and occasionally kills an incubating duck. Studies have shown that in Illinois wood-duck eggs may be destroyed by the fox squirrel and bull snake, in Louisiana by the gray rat snake, and in Maryland by the pilot blacksnake.

New types of nest boxes readily accepted by wood ducks are proving successful in reducing predation. The conventional board box has been modified by special protective entrances, and a new type of box has been devised: a cylindrical one made of sheet metal.

The board box.— Inside, the box (figs. 1 and 2) measures 18 to 24 inches high, 10 inches wide, and 10 inches front to back. It is not squirrel-proof and should be erected where inaccessible to these animals. Unfortunately, the customary 4-inch-diameter opening can be entered by most raccoons. Through experiment, the Illinois Natural History Survey (Bellrose, 1953) found that an elliptical opening, 3 inches high and 4 inches wide, admits wood ducks and excludes most raccoons, but 'coons sometimes gain entrance by gnawing the hole larger. Bellrose corrected this by masking a larger entrance hole in the wood with a piece of galvanized sheet metal, about 12 inches square, with a 3 by 4-inch elliptical hole (fig. 1).

There is some evidence that the elliptical opening may exclude a few larger wood ducks. This disadvantage appears to have been overcome by replacing the metal mask with a wooden entrance tunnel (figs. 1 and 2), originally designed by the Massachusetts Division of Fisheries and Game (McLaughlin and Grice, 1952). The tunnel is 4 by 4 inches on the inside and 10 inches long. During the first 3-year trial of several hundred nest boxes in Massachusetts, this tunnel has proved effective in excluding raccoons, but this is a more limited test than has been applied to the elliptical entrance. In certain localities it may be desirable to equip some boxes with tunnels and others with masks.

Boxes can be constructed of either dressed or rough-sawed, 1-inch boards. The wood should be well seasoned. Pine is satisfactory but not so lasting as cypress. Durability of the box can be increased by treating with a wood preservative or automobile undercoating. Treatment should be applied to the roof, the entire bottom board, and the lower 6 inches of the four inside walls. If a creosote-type preservative is used, it should be applied well in advance of the nesting season.

Do not apply a dark coating to the outside walls. The prevailing impression has been that old, weather-stained boxes are the most attractive to wood ducks, but there is considerable evidence that conspicuously new boxes are more readily accepted.

Nails used should be sufficiently long to hold securely despite rough handling and weathering. Ten-penny, coated box-nails have been found satisfactory. A loop of No. 12 galvanized steel wire secured tightly around the box will give additional strength. Large knotholes and cracks should be covered or sealed. Calking compound is suitable for sealing most cracks and can be applied rapidly with an inexpensive calking gun. Four 1/4-inch drainage holes should be bored through the bottom.

If the inside surface of the front board is smooth, as when dressed lumber is used, a strip of fine hardware cloth about 3 inches wide, tacked to it from the bottom of the box to the entrance hole, will help ducklings climb from the nest. An alternative is to roughen the surface with automobile undercoating.

The metal box.-- This was designed by Louis Ellebrecht, formerly manager of the Chautauqua National Wildlife Refuge, for the Illinois Natural History Survey (Bellrose, 1953), and has proved successful in excluding raccoons, squirrels, and snakes. This nest box (fig. 3 and cover) is equipped with a steep, cone-shaped roof and wooden bottom. Galvanized sheet metal or 12-inch-diameter galvanized furnace-piping or cold-air ducts may be used. This box is about 24 inches high and has an elliptical entrance hole 3 inches high and 4 inches wide. The inside walls should be rough-surfaced with automobile undercoating and the board bottom should be treated with a wood preservative and provided with four 1/4-inch drainage holes. Allowing the metal walls to extend half an inch beyond the bottom board protects it from water runoff.

Durability may be increased by applying a coat of flat, neutral-color paint to the outside. Since metal boxes absorb considerably more heat from the sun than wooden boxes, it may be desirable to place them in partial shade.

Location and Erection

Besides being well constructed, it is essential that boxes be suitably placed and properly erected. Choice of site is likely to determine the extent of successful use. In some areas, boxes erected over water have received more patronage than those placed on land some distance from the water's edge. Doubtless this is due, in part, to greater visibility and also to proximity of the habitat most used. Local conditions generally determine the best sites.

Visibility is an especially important factor governing the use of nest boxes. Those placed over or near water should be so oriented that the entrances will be conspicuous to birds using the water area (fig. 4). The front of the box should never be obstructed by surrounding vegetation.

Trees or stout snags surrounded by water during the nesting season are good sites for nest boxes. Shoreline trees sometimes can be utilized to advantage, but where they are accessible to squirrels, metal boxes may be advisable. Offshore nest boxes may deter squirrels, but raccoons do not hesitate to swim out for a tasty meal of eggs. Boxes should be elevated sufficiently to avoid flooding by high water.

In parts of Illinois, boxes as far as half a mile from water have been used. They were fastened to trees at least a foot in diameter in relatively open, mature, upland hardwoods and were placed about 15 feet above the ground. No foliage was permitted to shield the entrance. In general, it is advisable to erect boxes no further than a quarter of a mile from water.

Where there is little chance of extreme waterlevel fluctuations or movement of heavy ice, boxes can be fastened to either one or two steel posts or to cedar or locust posts sunk into marshes or pond bottoms (fig. 4). Where the bottom is firm, steel posts are satisfactory and are easier to establish than are wooden posts, especially in sand or gravel. To sink wooden posts into a firm bottom, use a rotary type posthole digger and wedge the post tightly in place with stones or stout stakes driven in around the base. In soft, muddy, or mucky bottoms, as in marshes, the posts can usually be driven or "twisted" in.

The following method, suggested by David Grice, may have special value in northern States. After a hole is cut through the ice, "a fourteen foot pole is placed upright and pushed into the mud as far as possible by the three-man crew. Then a second cedar pole is fastened as the arm of a cross with a light log chain. Two of the men stand on the cross bar (to add weight) and the third man, holding onto the end of the cross bar, walks in a circle until the upright has sunk to the proper level. Then the cross bar is removed, and the nesting box . . . (fastened) to the pole."

Boxes should be installed as nearly vertical as possible since backward tilt may prevent ducklings from climbing out. For fastening boxes to wooden posts or trees, either lag screws, hanger bolts, or storm-sash screw eyes, from 3 to 5 inches long, as may be required, are preferable to spikes. These fastening devices facilitate removal of boxes when necessary and also permit adjustments to growth of trees to which boxes are attached.

Nesting Material

Since wood ducks carry no nest material, about 3 inches of sawdust or shavings should be put in the box. This is used by the birds to cover their eggs during the laying period and serves as a substitute for decayed wood usually found in natural-cavity nests. It has been pointed out by Miller that "starlings will often remove shavings from a box but are not so prone to remove sawdust." Nest boxes should be inspected at least once a year, preferably in February, to clean out debris, loosen up the sawdust or shavings, add fresh material if needed, and make necessary repairs.

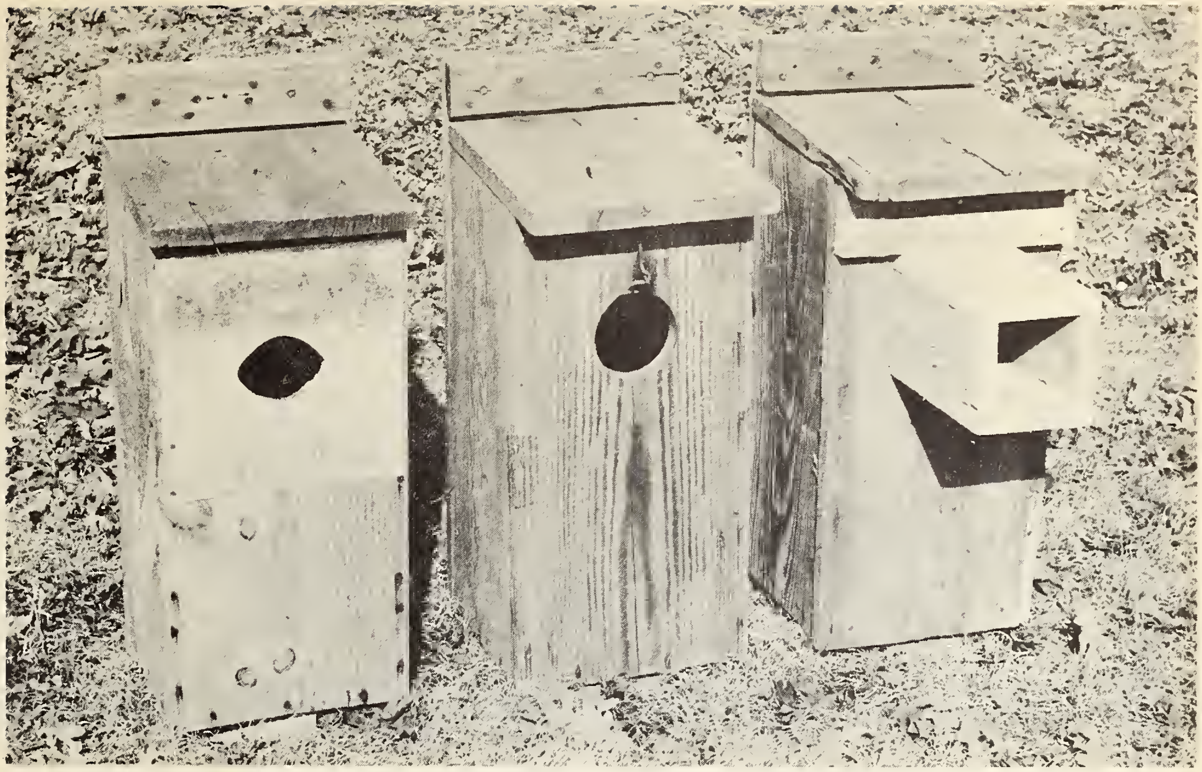

Fig. 1. Two methods of raccoon-proofing: Elliptical opening in sheet metal on the left, and a wooden-tunnel entrance on the right. The middle box is not raccoon-proofed.

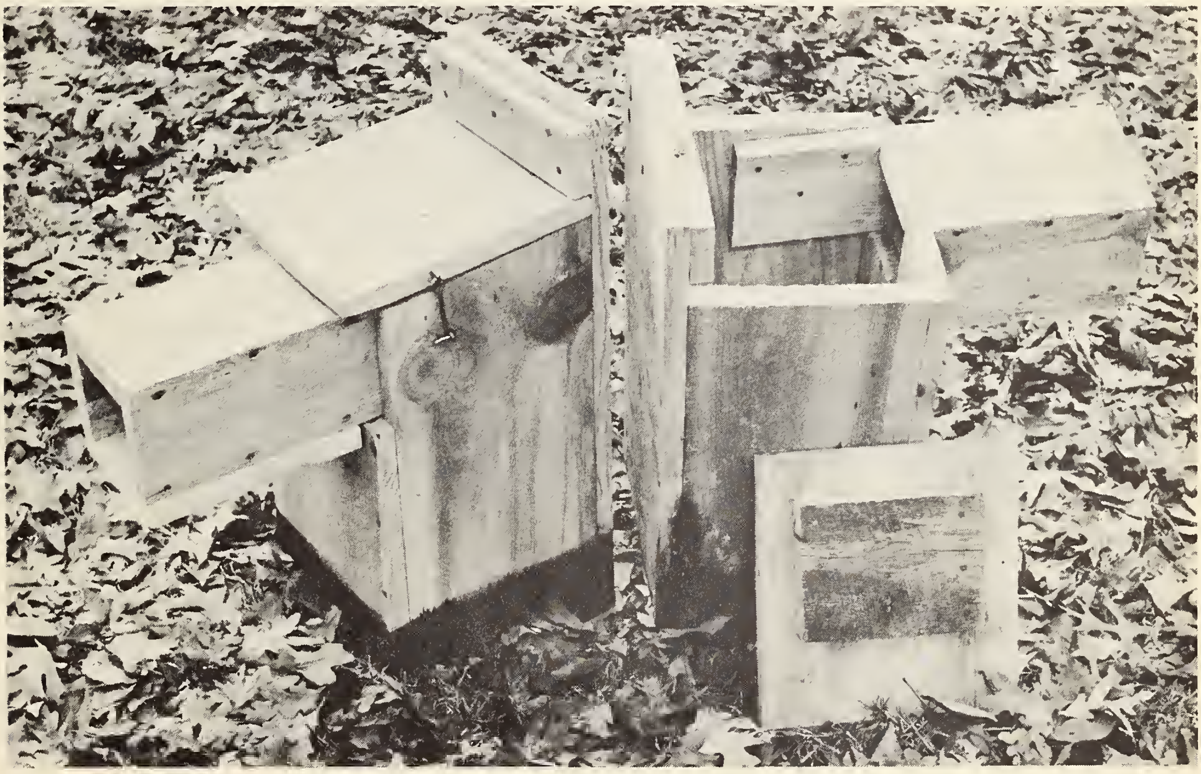

Fig. 2. Inside and outside views of box with tunnel entrance.

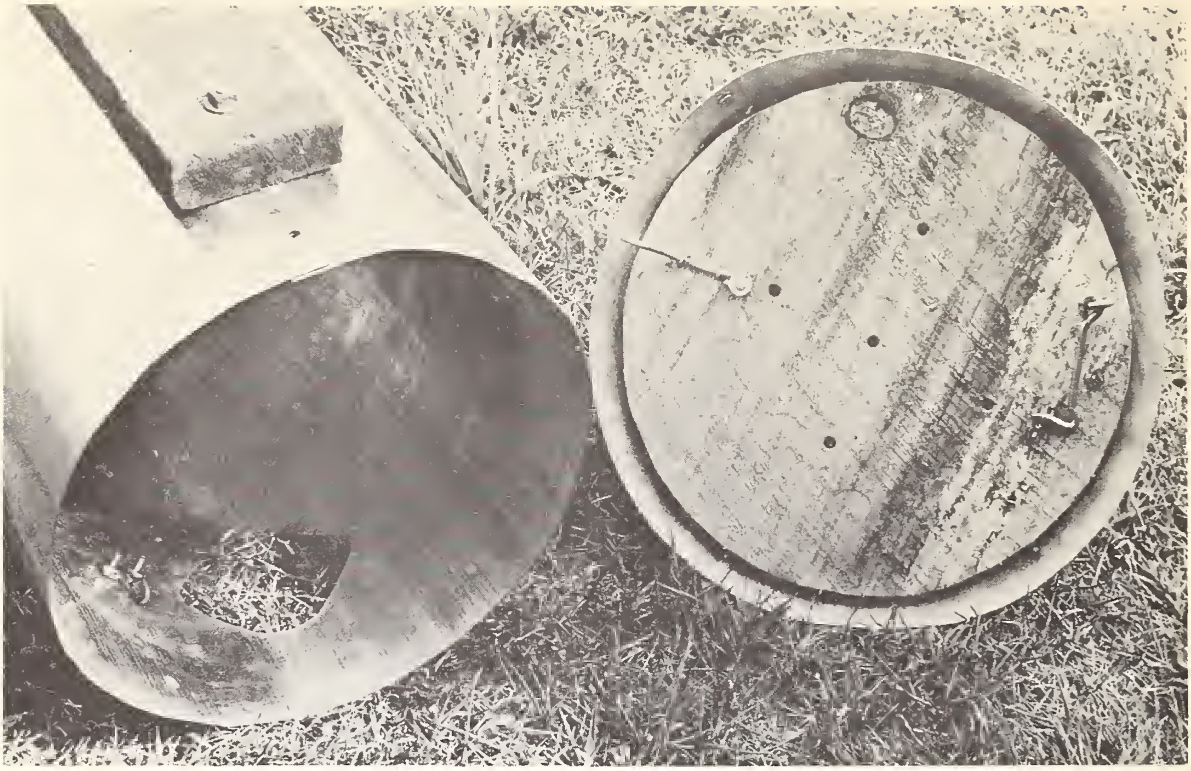

Fig. 3. Inside view of metal box showing method of attaching roof.

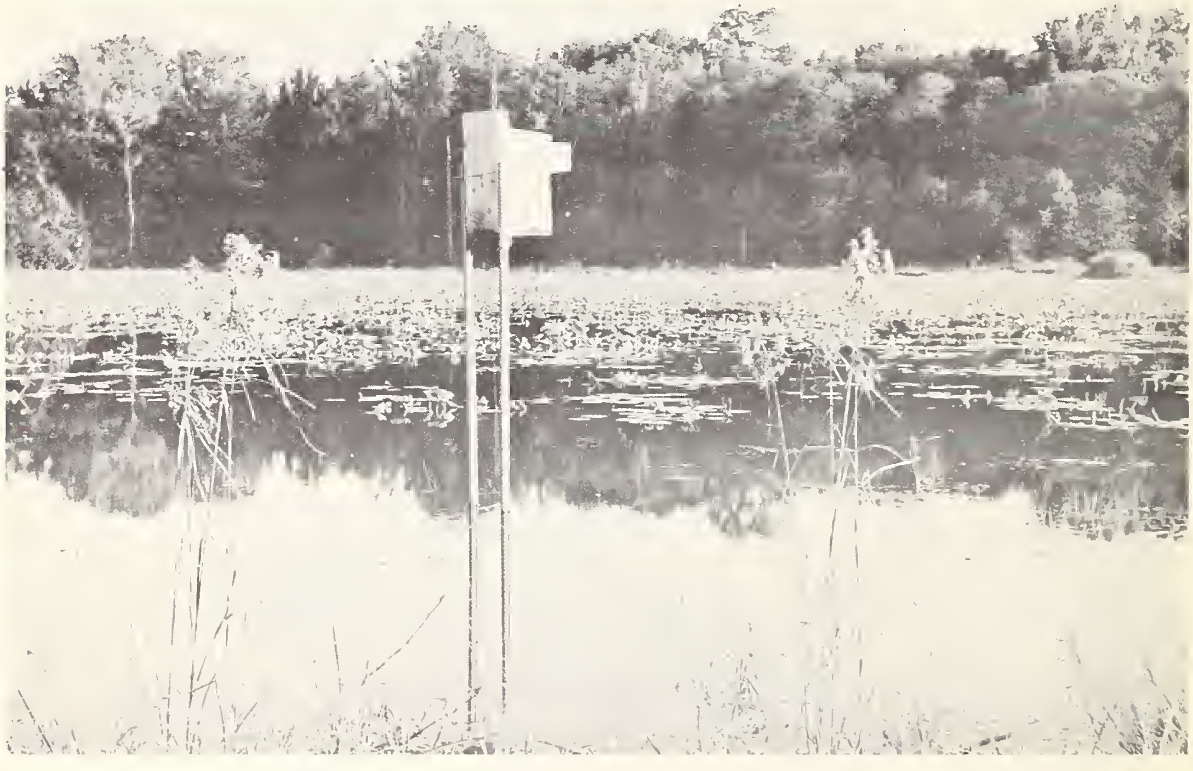

Fig. 4. A well-placed nest box.

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